

(FILE 'HOME' ENTERED AT 14:10:08 ON 12 AUG 2003)

FILE 'INSPEC' ENTERED AT 14:10:18 ON 12 AUG 2003

L1 0 TEMKIN.AU.
L2 240 TEMKIN
L3 7708 ALN
L4 0 L2 AND L3
L5 13934 GAN
L6 0 L2 AND L5
L7 292 MBE AND L3
L8 221 L7 AND L5
L9 15859 ISLANDS
L10 4 L8 AND L9
L11 2 NIKISHIN
L12 357098 SILICON OR SI
L13 491 L3 AND L5 AND L12
L14 20255 L12 (4A) SUBSTRATE
L15 9912 SILICON (2A)NITRIDE
L16 7 L13 AND L14 AND L15

FILE 'STNGUIDE' ENTERED AT 14:31:34 ON 12 AUG 2003

FILE 'INSPEC' ENTERED AT 14:31:39 ON 12 AUG 2003

FILE 'CA' ENTERED AT 14:32:32 ON 12 AUG 2003

L17 142 L16
L18 0 L2 AND L17
L19 9710 SIN
L20 2 L17 AND L19
L21 2 SI.SUB.3N.SUB.4
L22 28565 AL (2A) (LAYER OR COATING OR FILM OR ISLANDS)
L23 4 L17 AND L22

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7/7/1999

ANSWER 6 OF 7 INSPEC (C) 2003 IEE on STN

AN 1994:4738005 INSPEC DN A9419-8115G-011; B9410-0510D-024

TI Interface chemistry and surface morphology in the initial stages of growth of **GaN** and **AlN** on alpha -SiC and sapphire.

AU Sitar, Z.; Smith, L.L.; Davis, R.F. (Dept. of Mater. Sci. & Eng., North Carolina State Univ., Raleigh, NC, USA)

SO Journal of Crystal Growth (Aug. 1994) vol.141, no.1-2, p.11-21. 17 refs.

Price: CCCC 0022-0248/94/\$07.00

CODEN: JCRGAE ISSN: 0022-0248

DT Journal

TC Experimental

CY Netherlands

LA English

AB The morphology and interface chemistry occurring during the initial stages of growth of **GaN** and **AlN** layers on alpha (6H)-SiC and sapphire have been examined. Films were grown using gas source molecular beam epitaxy (MBE) equipment containing an electron cyclotron resonance (ECR) plasma source to activate molecular nitrogen. The experiments consisted of sequential depositions of approximately one monolayer followed by X-ray photoelectron spectroscopy (XPS) analysis. Evidence for **silicon nitride** formation on the SiC surface was obtained from the studies of both the Si oxidation states and the **substrate** peak intensity dependence on film thickness. The growth of **GaN** on sapphire appeared to occur via Stranski-Krastanov mode, while the growth on SiC showed characteristics of three-dimensional growth. **AlN** grew in a layer-by-layer mode on both substrates.

CC A8115G Vacuum deposition; A6855 Thin film growth, structure, and epitaxy; A8265J Heterogeneous catalysis at surfaces and other surface reactions; A6820 Solid surface structure; A8280P Electron spectroscopy for chemical analysis (photoelectron, Auger spectroscopy, etc.); A7960E Semiconductors and insulators; B0510D Epitaxial growth; B0540 Ceramics and refractories; B2520D II-VI and III-V semiconductors

(4) Yano; US U6045626 A 2000

L20 ANSWER 2 OF 2 CA COPYRIGHT 2003 ACS on STN

AN 136:142234 CA

TI High quality GaN layers on Si(111) substrates:
AlN buffer layer optimization and insertion of a SiN
intermediate layer

AU Hageman, P. R.; Haffouz, S.; Kirilyuk, V.; Grzegorzczuk, A.; Larsen, P. K.
CS Research Institute for Materials (RIM), University of Nijmegen, Nijmegen,
NL-6525 ED, Neth.

SO Physica Status Solidi A: Applied Research (2001), 188(2), 523-526
CODEN: PSSABA; ISSN: 0031-8965

PB Wiley-VCH Verlag Berlin GmbH

DT Journal

LA English

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related
Properties)

AB The authors present a study on the material properties of GaN
films grown on (111) Si substrates by low-pressure metalorg. CVD
using AlN buffer layers. This buffer layer is optimized with
respect to growth temp. and time for the optical and structural properties
of the GaN epilayers. The insertion of a SiN intermediate
layer significantly increases the optical and structural properties. It
results in a redn. of the D0X FWHM to 10 meV and in a 2.5-fold increase of
its luminescence intensity. The FWHM of sym. and asym. omega-scans are
reduced 832-669 arcsec and from 702 to 547 arcsec, resp.

ST gallium nitride silicon substrate
luminescence

IT Luminescence

(high quality GaN layers on Si(111) substrates:
AlN buffer layer optimization and insertion of a SiN
intermediate layer)

IT Vapor deposition process
(metalorg.; high quality GaN layers on Si(111)
substrates: AlN buffer layer optimization and insertion of a
SiN intermediate layer)

IT 12033-89-5, Silicon nitride, uses 24304-00-5, Aluminum nitride (AlN) 25617-97-4, Gallium nitride (GaN)

RL: DEV (Device component use); USES (Uses)
(high quality GaN layers on Si(111) substrates:
AlN buffer layer optimization and insertion of a SiN
intermediate layer)

RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

(1) de Theije, F; J Cryst 1999, V197, P31

(2) Haffouz, S; Appl Phys Lett 1998, V73, P1278 CA

(3) Vennegues, P; J Cryst Growth 1998, V187, P167 CA

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